A LOCAL WEATHER SIGN.

Almost every locality in the world has some special local weather sign, although these are not always recognized by the ordinary observer. We refer to signs that are rational and depend upon the physical properties of the atmosphere; and it is not derogatory to the reputation of the local weather prophet to study out and make use of these signs when he endeavors to make local weather predictions better than the general forecasts of the Weather Bureau. For a long time the audibility of sounds at a distance, or the visibility of distant objects, or the occurrence of mirage, have all been known to indicate special quiet and homogeneous conditions of the atmosphere, such as precede local disturbances. The explanation of the connection between these signs and the resulting phenomena involves the consideration that the air is peculiarly opaque to light and sound when it is a mixture of warm and cold currents, and is transparent to these when the distribution of temperature and moisture is very uniform. Thus, the English observers have for a century past recorded the visibility of objects and the audibility of sounds as indicative of approaching rain. The following interesting item may refer to some similar phenomenon, or it may possibly be that the roaring noise here described is produced by the wind blowing over the top of the mountain and forest before it has as yet reached the lowlands and distant observers. It is quite common for the wind to blow strongly night and day overhead while at the earth's surface it is calm at night but windy by day. This was explained by Espy as being due to the fact that during the daytime the sun warmed the ground and the adjacent air, which, therefore, rises by buoyancy and lets the rapid wind overhead descend to the earth's surface; whereas during the night-time the ground and the adjacent air are cold, therefore they do not rise, and the rapid upper winds flow overhead without descending to the ground. Whatever may be found to be the true explanation, it is evident that the phenomena observed at Waynesville, Haywood County, N. C., are worthy of study by the observers in that neighborhood, and the following extract from the Waynesville Courier is worthy of permanent record:

> The Shewbird Mountain, 4 miles south of town, is to us the strangest thing in this whole mountain country. The mountain is full of large, rough cliffs, and by its peculiar shape and position serves as a weather signal to the people for miles around, because, as the general saying is, "when old Shewbird begins to roar you may prepare for rough weather." It generally commences about dark, and continues to roar until the rain or snow comes, which may be five hours or it may be ten. At dark the air may be perfectly still and not a cloud in sight, yet the mountain may begin to roar, and you may know that by the next morning the bad weather will be on hand. Though the mountain is 4 miles away, the roaring sounds like that made by a loaded freight train half a mile distant, and it is a continuous sound, too, with no intermission.

CLIMATOLOGY IN CALIFORNIA.

The report of the California section for June, 1900, contains a brief comparison by Mr. McAdie of the relative climates of the Weather Bureau stations in San Francisco and on Mount Tamalpais to which we must refer for many details. Mr. McAdie says:

> The highest temperature recorded on the mountain was 96° on July 18, while on the same date the maximum temperature at San Francisco was 66° and at Point Reyes Light, 52°. The highest temperature recorded at San Francisco during 1899 was 94° on October 8, while on the same date the maximum temperature on Mount Tamalpais was 88° and at Point Reyes, 74°. The lowest temperature recorded during the year on the mountain was 23° on February 4, and on the same date at San Francisco and Point Reyes, 34°. During the summer months there is very frequently a cooling of 11° at the lower station according to the prevalence of fog. The mean relative humidity for the whole year is 59 per cent on the mountain and 83 per cent at San Francisco. This dryness is especially noticeable during the summer months, and is doubtless the cause of the agreeable change of climate noted by visitors. The maximum wind velocities are 91 miles on the mountain and 47 miles in the city. The total annual wind movement was 177,000 miles at Mount Tamalpais and 96,600 at San Francisco; the mean annual pressure was 29.87 and 27.55 inches; the mean annual temperature 54.9° and 55.7; mean annual dew-point, 48° and 36°; total annual rainfall, 23.23 and 36.86 inches, at the lower and upper stations, respectively.

METEOROLOGICAL CONDITIONS FAVORABLE TO SPONTANEOUS COMBUSTION.

Every meteorological or climatological condition that can affect the welfare of mankind comes under the consideration of the Weather Bureau, no matter whether explicitly mentioned in the acts of Congress or merely implied in general.

In the June report of the Ohio section, Mr. J. Warren Smith calls attention to the fires that are started by the spontaneous combustion of hay. Spontaneous combustion, whether of hay, cotton, oil and waste, or any other substance, becomes imminent only under certain atmospheric conditions as to temperature, pressure, and moisture. The heat caused by the oxidation of the oil in cotton waste or rags, or that caused by fermentation in moist hay and other substances, does not give rise to flame unless the temperature of the whole mass is above a certain limit, which is as yet ill defined. In general, spontaneous combustion is not to be feared if the fresh supply of oxygen from the atmosphere is cut off. If the inflammable substance is confined within a non-conducting inclosure, such as the interior of a bale of cotton or a tight room or a closed box, its temperature may attain a point surpassing the point of ignition, but danger does not occur until the inclosure is opened and a fresh supply of oxygen is suddenly admitted when, of course, everything breaks out in flame. The best preventative of spontaneous combustion is a rapid and complete ventilation, by which means the oxydizing and fermenting substances are kept cooled down below the point of ignition. Mr. J. Warren Smith states—

> That the fermentation within moist hay may raise the temperature to 374° F., and that careful tests show that clover hay actually does ignite at temperatures approximately the same as this. He particularly requests that all details as to actual cases of spontaneous combustion may be sent to him for further investigation.

WEATHER BUREAU SERVICE IN HAITI.

In connection with the improvement of the West Indian branch of the Weather Bureau service, we take pleasure in recording the very material assistance received through the active cooperation of Hon. W. F. Powell, United States Envoy Extraordinary and Minister Plenipotentiary at Port au Prince, through whom our Government has received from the Haitian Government the free use of its telegraph service in aid of this important work. At first the request of the Weather Bureau for permission to establish a meteorological and telegraph station at Mole St. Nicholas was declined, but after some delay the government gave consent to the establishment of an observatory at Cape Haiti. Unfortunately the immediate establishment of this important station was temporarily delayed for the want of the necessary funds. Meantime negotiations with the cable company and the Haitian Government land service led to an arrangement by which the cable expenses are paid by the Weather Bureau but the receipt and distribution of all observations and forecasts throughout Haiti was assumed by the Haitian Government, whose cabinet stated through its minister, Mr. St. Victor, "that the government grants to the United States the use of its telegraphic service free of all cost to the Weather Bureau," and added, "that it is glad to render this aid to our Government in the establishment of such an important work." It is under-